

# Master in Artificial Intelligence



## Ethical Considerations I







# Purpose

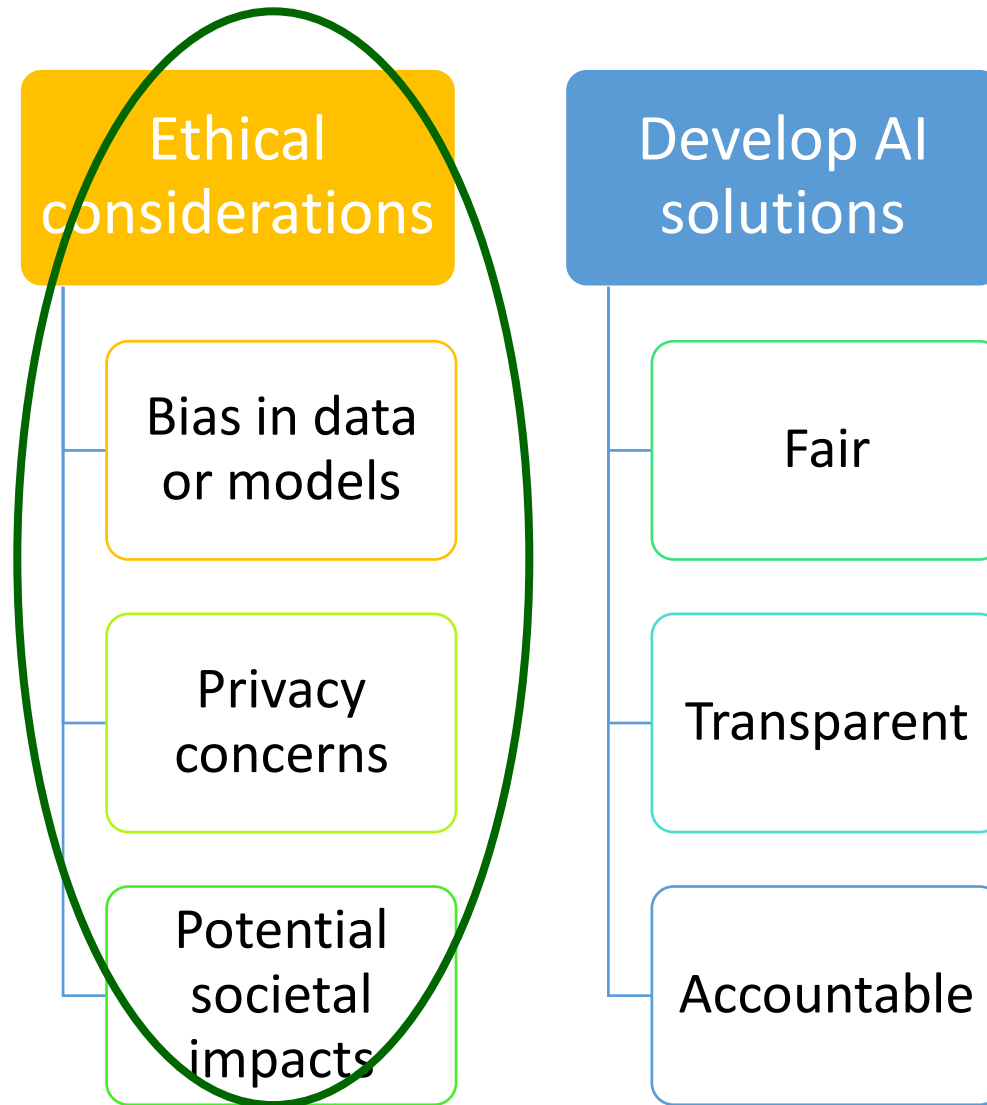
**The purpose of the section is to help you learn how to take care of ethical considerations in artificial intelligence and machine learning to become a Successful Artificial Intelligence (AI) Engineer**

**At the end of this lecture, you will learn the following**

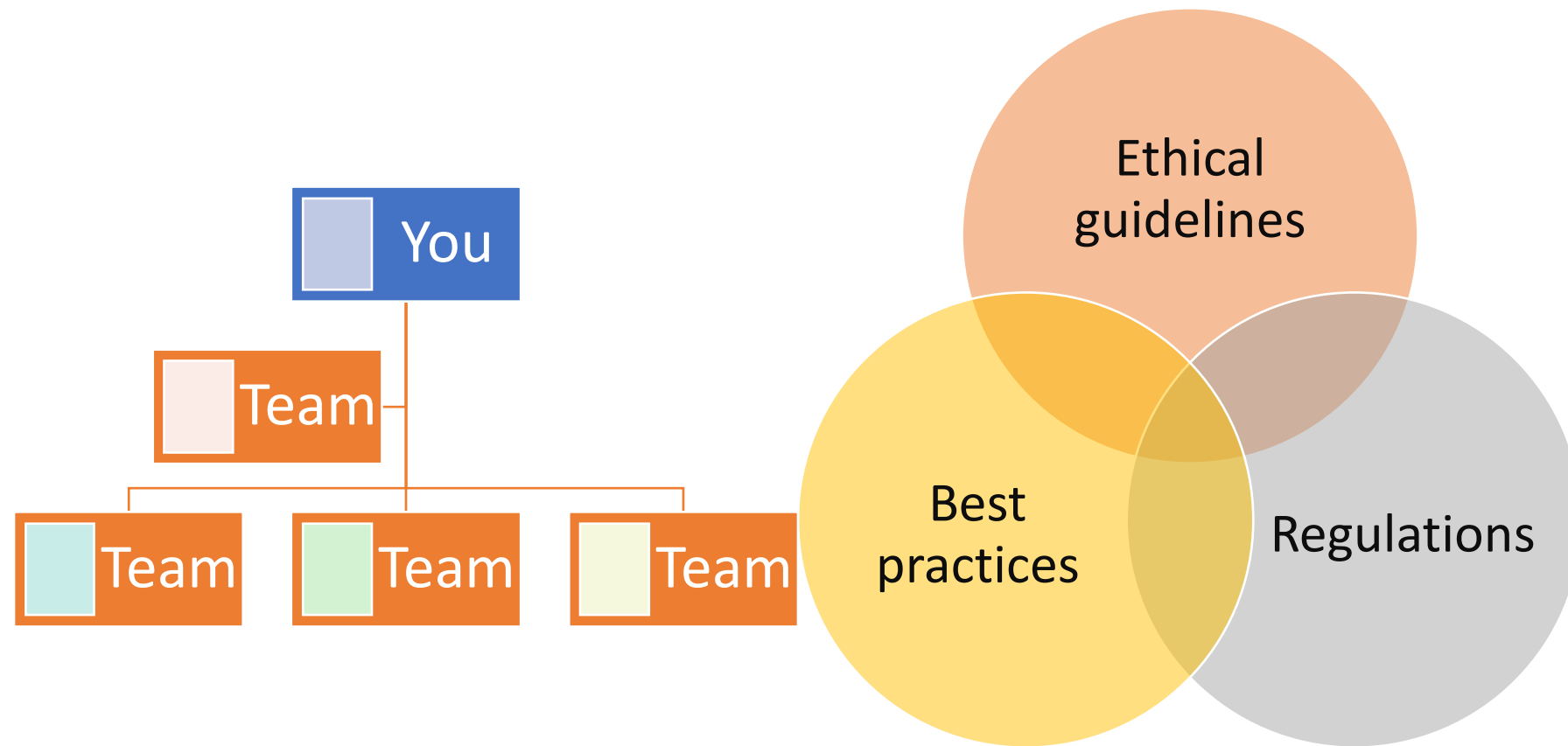
- **How to be mindful of ethical considerations related to the use of AI technologies, such as bias in data or models, privacy concerns, and potential societal impacts**



# How to be mindful of ethical considerations related to the use of AI technologies



# Education and Awareness



# Ethical Frameworks

**Adopt ethical frameworks or guidelines**

**IEEE Ethically Aligned Design**

**ACM Code of Ethics**

**AI Ethics Guidelines by the European Commission**

**Use these frameworks**

**Guide decision-making**

**Ensure ethical considerations are integrated into the AI development process**



# Bias Detection and Mitigation

## Bias Audits

- Goal is to identify areas of potential bias
- Involve systematically analyzing datasets and models
- Key steps include
  - Data preprocessing
  - Data analysis
  - Model evaluation

## Fairness-Aware Machine Learning

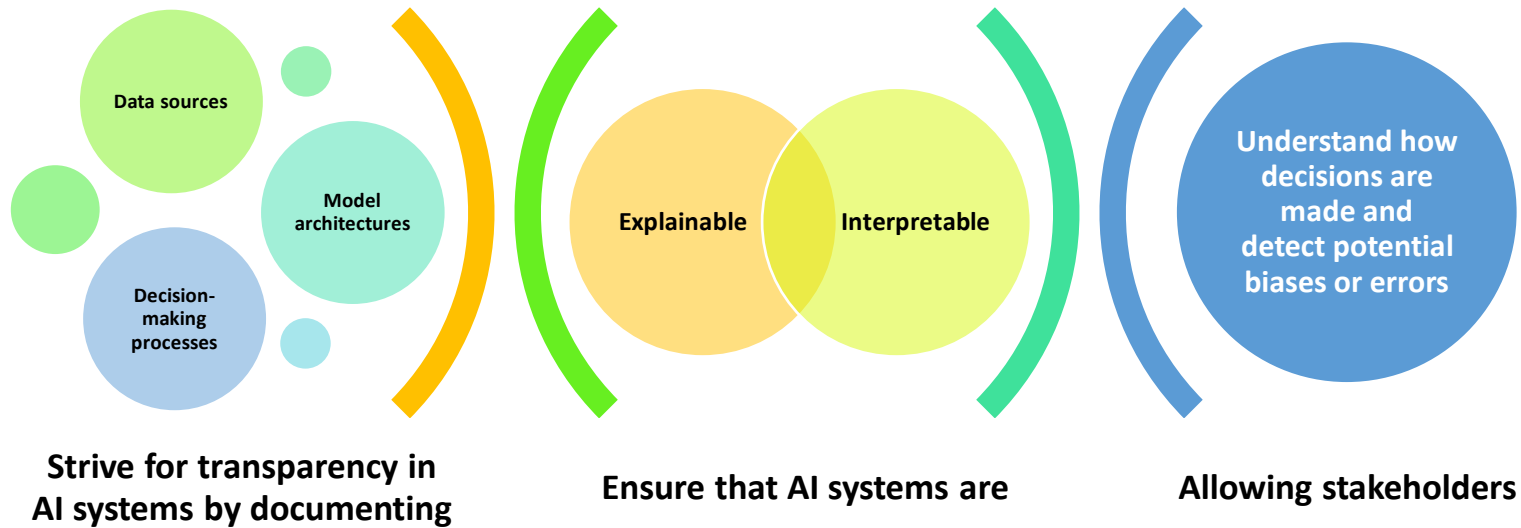
- aims to incorporate fairness considerations into the design, training, and evaluation of machine learning models
- Techniques include
  - Fairness constraints
  - Fairness metrics
  - Fair representation learning

## Bias Mitigation Strategies

- Aim to mitigate biases in data and algorithms
- Include
  - Data preprocessing
  - Algorithmic adjustments
  - Counterfactual fairness
  - Regularization techniques
  - Post-processing



# Transparency and Explainability





# Privacy Protection

Implement  
privacy-  
preserving  
techniques

Data  
anonymization

Encryption

Differential  
privacy.

Obtain  
informed  
consent from  
users before

Collecting

Processing  
their personal  
data

Provide clear  
explanations  
about

How their data  
will be used



# Societal Impacts and Equity

**Engage with diverse stakeholders, including marginalized communities**

**Understand their perspectives and concerns**

**Involve them in the design and deployment of AI systems**

**Prioritize**

**Fairness**

**Equity**

**Inclusivity in AI development**

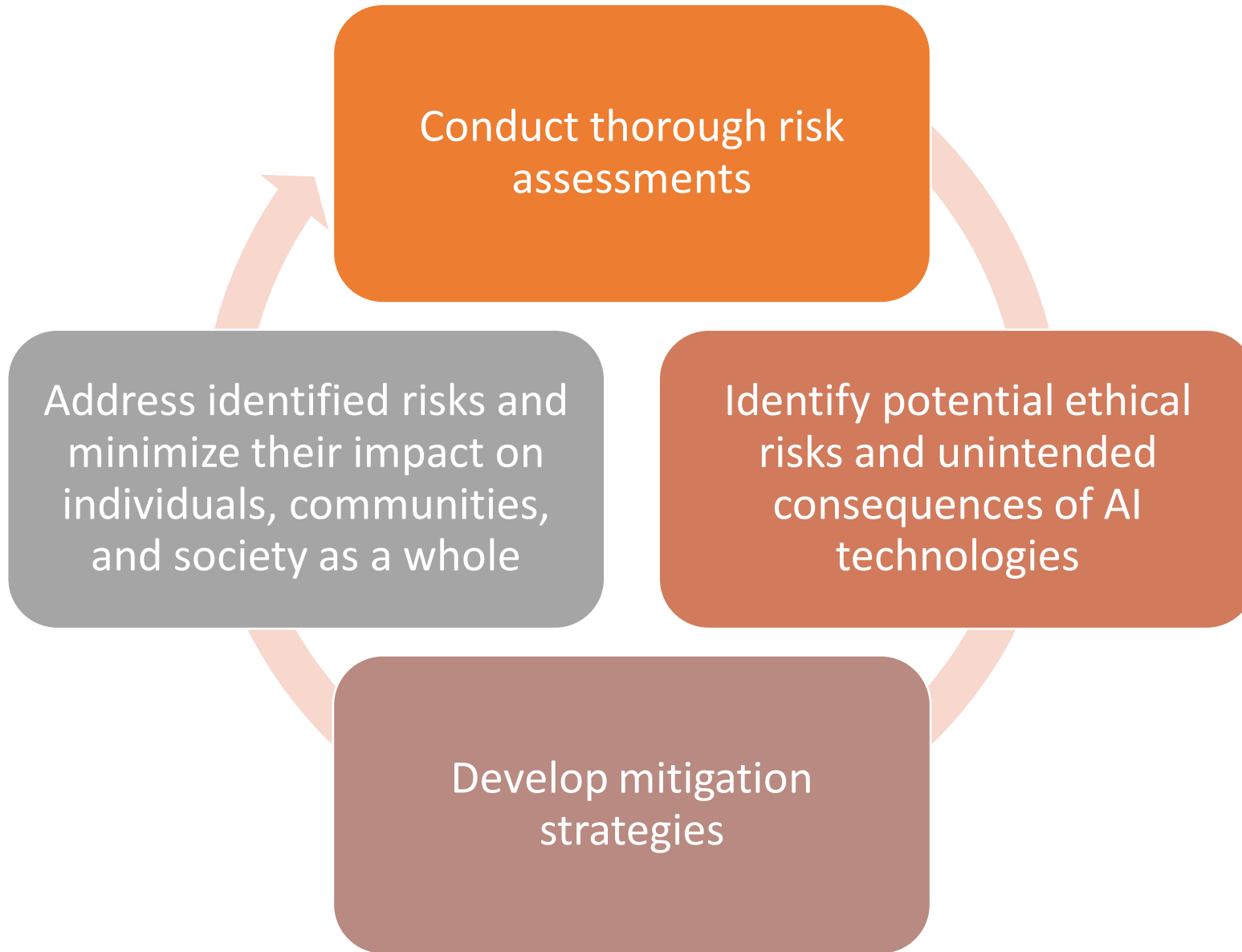
**Design systems that**

**Benefit all members of society**

**Minimize harm to vulnerable populations**



# Risk Assessment and Mitigation



# Continuous Monitoring and Evaluation

Establish  
mechanisms

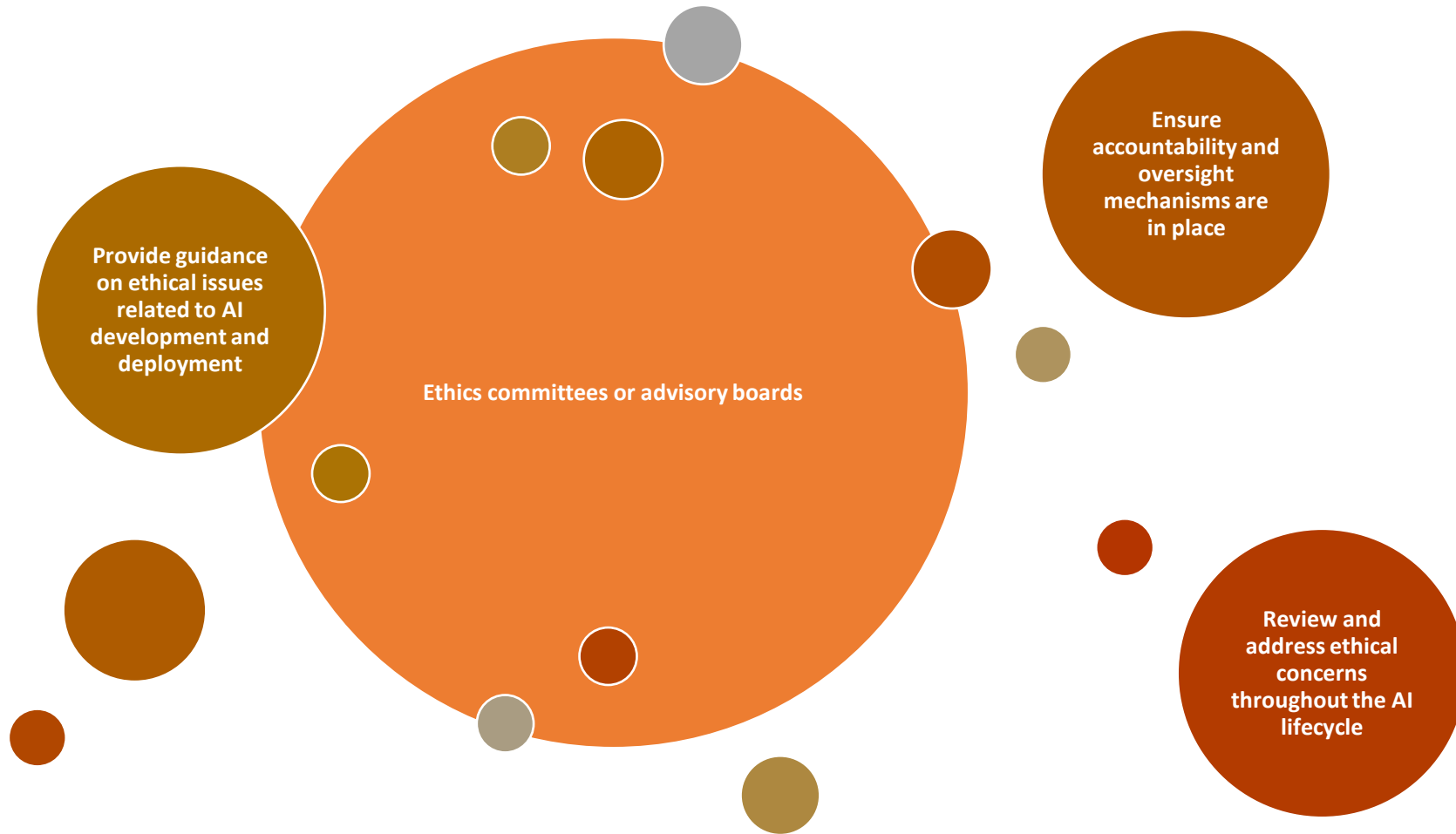
Solicit  
feedback  
from  
stakeholders

Be responsive  
to their  
concerns and  
suggestions

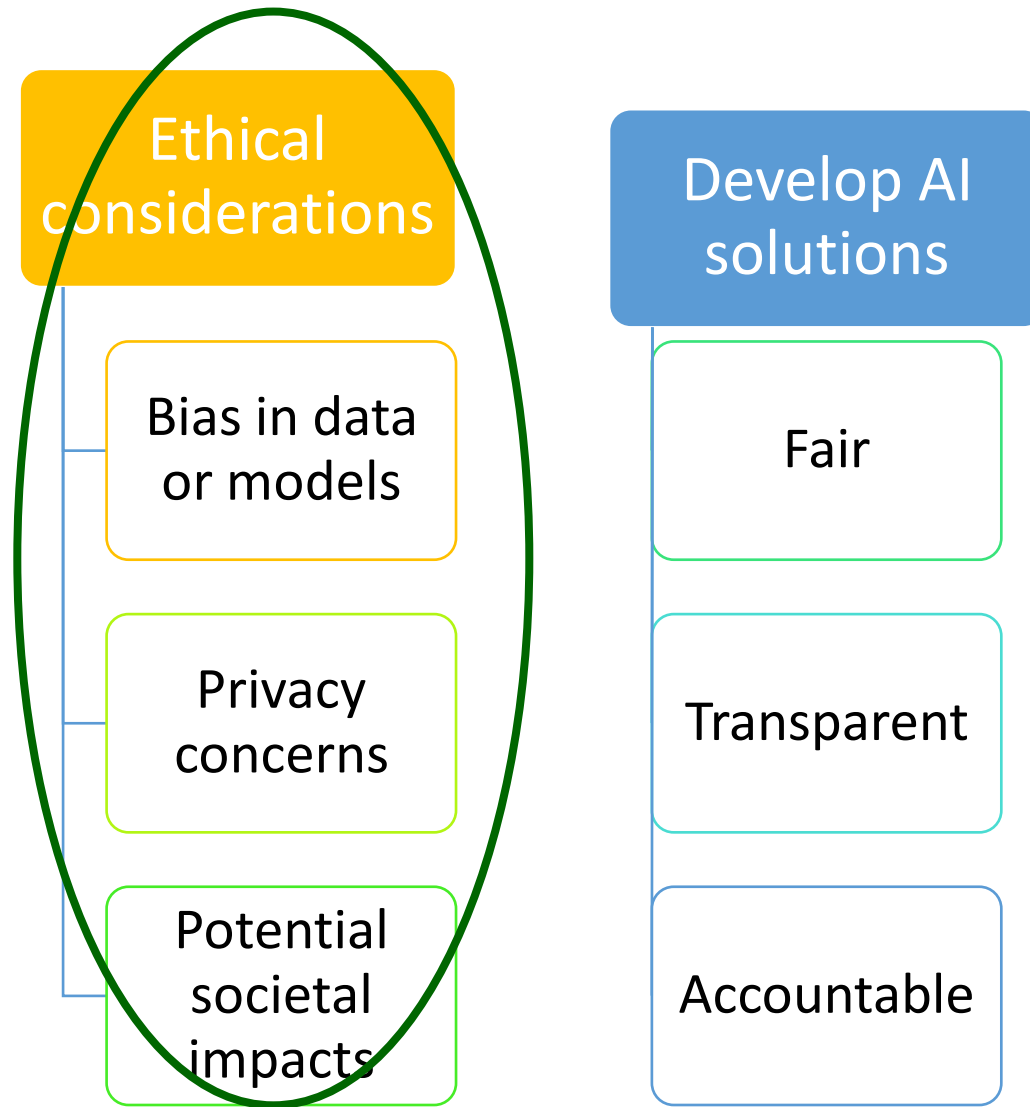




# Ethics Committees and Oversight

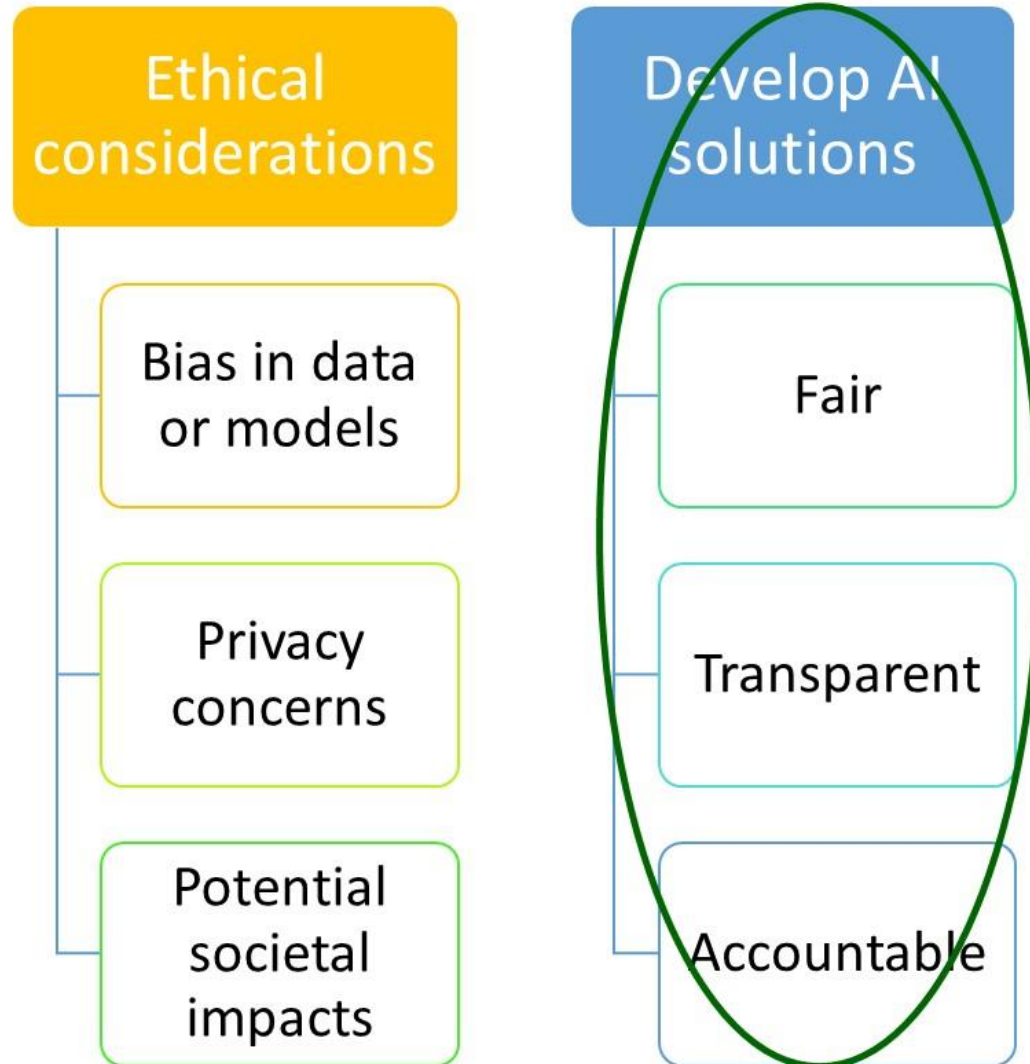


# How to be mindful of ethical considerations related to the use of AI technologies



# What is next?

How to develop AI solutions that are fair, transparent, and accountable





# Master in Artificial Intelligence

*Thank  
you*



## Ethical Considerations I

